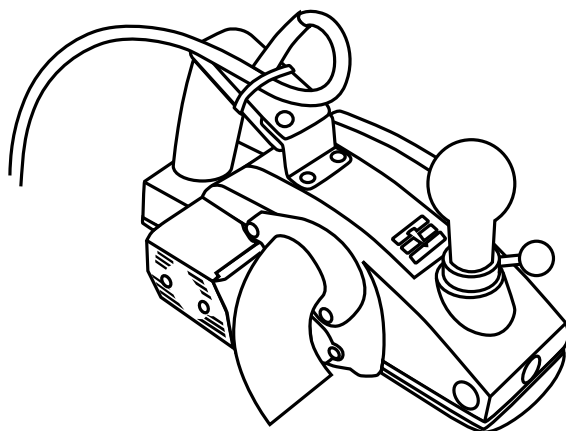


CLARK FOAM PLANER

2003 MODEL

SAFETY AND OPERATING INSTRUCTIONS



Version 1, 2003



WARNING – SAFETY INSTRUCTIONS

This planer is sold as is. The planer is designed for the specific purpose of shaping Clark Foam using the well-known techniques and equipment universally used in the polyurethane foam surfboard industry since 1958. The planer is not suitable for any other purpose and may cause injury or death if used for any other application or if any unorthodox surfboard shaping methods or equipment are used. Beside observation, there is written material and video explaining the above mentioned techniques and equipment.

Should the planer make any unusual noise during operation, immediately stop using the planer and return it to an authorized Clark Foam representative for inspection and repair. At the Clark Foam factory we have full repair capabilities and maintain a telephone help service weekdays between 6:00 AM and 2:30 PM P.S.T. at (949) 582-2000.

The planer is double insulated protecting the operator from electrical shock. This is not the real danger. Fine foam dusts in air in certain concentrations are very explosive. Normally there will be a small explosion followed by a very large explosion of the foam dust on the ceiling and walls dislodged by the small explosion. Also foam and wood burns very rapidly. Historically faulty wiring has caused most shaping room combustion. Serious fires have been caused by poor housekeeping or fuel buildup combined with faulty wiring. Always keep the planer cord, plug, and all drop cords used in and around shaping in top condition and use adequate size wire. Do not try to repair damaged or worn wire and parts with tape or other methods but replace them with new parts using commonly accepted wiring standards.

If the planer is not frequently blown out with air to clean the foam dust from the bearing area the bearings may overheat causing premature failure or fire. If the planer is run with faulty bearings the heat buildup can cause the plastic housing to melt ruining the planer. Significant damage to the housing can cause danger to the operator.

Keep all screws, bolts, and covers tightly in place. The six bolts holding the blades and blade backplates in position must be securely tightened at all times.

Avoid loose clothing or other articles that could become entangled in the planer blades. Always hold the planer very tight when the motor is running. Never operate the planer with a faulty or bypassed trigger or other modified wiring.

The handles on the planer are significantly weaker than the handles on standard electric power planers. If there is any evidence of housing or handle failure, especially rear handle failure, stop using the planer until it is repaired at the Clark Foam factory.

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INTRODUCTION

The 2003 Model Clark Foam Planer and tool kit was developed specifically for the professional shaper. It comes fully equipped with every option the majority of professional shapers use. The planer is assembled at Clark Foam from a combination of stock parts, modified stock parts, and parts fabricated by or for Clark Foam. The main body is a Hitachi P20-SB.

Clark Foam has sold a modified Hitachi F-20 and P-20SB series planer since 1988. It has proven durability and a good safety record.

Since 1988 we have accumulated a lot of information from shapers about the maintenance and adjustment of this type of planer. In doing the research for the 2003 Model we gathered a lot of information regarding productivity or increasing productivity while using power planers. The following instructions and suggestions are based on our experience and the experiences of many shapers. Each item in the instructions represents a shaping tip or problem one or more shapers have encountered or brought to our attention. Many of these problems have caused individual shapers a lot of frustration and a significant loss of productivity. Therefore we have put a lot of thought into this document and have tried to cover each subject in great detail.

The depth adjustment mechanism on this planer is especially difficult to set up and understand. A new 2003 Model planer should be properly set up and work well out of the box. If you choose to customize the depth adjustment mechanism or the depth adjustment mechanism requires maintenance be sure to read the instructions very carefully. This is a complex mechanism and it would be very easy to screw it up!

IT IS RECOMMENDED THAT YOU CAREFULLY READ THESE INSTRUCTIONS AND SUGGESTIONS, KEEP THIS DOCUMENT FOR FUTURE REFERENCE, AND KEEP ALL TOOLS AND PARTS THAT COME WITH THE PLANER.

FEATURES

- Very lightweight for reducing fatigue.
- Adequate power for shaping Clark Foam when the blades are sharp.
- Significantly increased productivity using a blade/blade holder exchange service offered by Clark Foam that puts sharp blades in the planer in less than 5 minutes.
- Enough belt housing clearance to allow full depth, two way cutting passes.
- The rear base plate is milled and indexed to the blades for precision cutting.
- More room for the front hand than any planer used for surfboard shaping.

- When properly set up the depth adjustment mechanism operates very smoothly and there is almost no backlash or play.
- The depth adjustment mechanism indicator can be moved to accommodate the individual shaper's style.
- The large depth adjustment mechanism knob can be customized using knobs available from Clark Foam and commercially available knobs.
- The depth adjustment knob's tension is adjustable.
- A foam seal keeps dust and debris out of the depth adjustment mechanism significantly reducing maintenance.
- The depth adjustment mechanism is Teflon coated and should require no lubrication or maintenance for the life of the planer.
- The depth adjustment mechanism can be taken apart and cleaned insuring very smooth operation for the life of the planer.
- Using shim washers the depth indicator knob can be set so the planer begins cutting at a position preferred by the shaper. (See instructions for more details.)
- The maximum cut depth can be customized using a spacer provided with the planer.
- The rear handle is very close to the work and positioned for horizontal movement rather than downward pressure. This allows higher horses and lights bringing the work closer to the eye.
- The base plates are modified for shaping surfboards. The rear plate is wider than earlier models and the front plate is tapered so the planer will slide over glue and obstructions rather than plowing them into the foam.
- The planer is very short. This is an advantage for all but perfectly flat surfaces.
- Each planer comes with an exhaust deflector that can either attach to a vacuum hose or be used to deflect the exhaust away from the shaper. The deflector has several configurations that can be changed to fit the individual shaper.
- A built in fan blows the dust out of the planer allowing a small exhaust port.
- The power cord goes straight up which is ideal for a vacuum system. It can be looped and tied for shaping without a vacuum.
- The power cord is 25 feet long.
- The planer has high quality, sealed bearings for long life. The bearings used in the 2003 Model are custom built for low friction and are an improvement over our older Pro Model bearings. Because of this the 2003 Model has more power.
- Planers can be custom built eliminating some modifications or changing other modifications.
- Included with the planer is a full tool kit and a jig for indexing cutter blades prior to installing them in the planer. (There is a full list of what is included with the planer on the last page.) There is also a blade-sharpening device available by special order.

SERVICE

Clark Foam will repair planers we have sold at the California Factory. Clark Foam stocks and sells the commonly used parts like brushes, triggers, blades, blade holders, depth adjustment components, bearings, foam filters, and knobs. We can usually rob parts we do not stock from new planers being assembled. We can also order any part on the planer. It will probably be easier to purchase parts from Clark Foam rather than from a local repair center because so many parts are modified.

HELP LINE

Weekdays between 6:00 AM and 2:30 PM Pacific Standard Time there will be an expert available to answer planer and vacuum system technical questions at (949) 582-2000. FAX questions to (949) 582-5085 or e-mail to clarkfoam@pacbell.net. Also most representatives of Clark Foam have some planer experience.

FIRE DANGER

The first rule is "no fuel - no fire". Keep a clean shop. Also if you burn down it hurts everyone building surfboards. Fire Marshals read statistics and newspapers. You will not be very popular!

Wiring is the number one cause of surfboard factory fires. Maintain good wiring and use common sense. Poor housekeeping is the second most common cause of fires.

CUSTOM PLANERS

While developing the 2003 Model we identified three important things: First the really good shapers have developed an incredible level of skill with their planers. Second we noticed that once an experienced shaper has a planer set up a certain way they do not like change. Last we noticed there are significant differences of opinion in several areas of planer design.

During our developmental work we tried a number of configurations including knobs, cut depth indicators, base plates, handles, base plates, and modifications to the main plastic frame. This information is available to customers.

Often we can build a special planer to the customer's specification.

BLADE EXCHANGE SERVICE - BLADE SHARPENING

Beginning in 2003 Clark Foam offers a blade exchange service. Here is how it works: The planer owner hands us a set of dull blades and blade holders. The blades may have any amount of wear. The blades and blade holder must not be damaged. We hand the planer owner a set of sharp blades attached to blade holders. The blades might be brand new or they may have been sharpened for their very last time. The blade holder will be in good condition. The sharp set of blades is indexed on the blade holder and ready to install. Removing the dull blades and installing sharp, indexed blades takes less than 5 minutes. Only 6 bolts are involved.

The exchange service only applies to both hand and power planers sold by Clark Foam.

If the planer owner is not near an exchange point they should purchase an extra set of blades and blade holders and do the exchange by mail. Send them to Clark Foam, 25887 Crown Valley Parkway, Laguna Niguel, California 92677.

The blades are sharpened at the Clark Foam Factory using a state of the art, automatic sharpening machine. The blades are indexed on the blade holder using the same jig that comes with each planer. Our quality control is excellent.

We also sharpen blades from other hand and power planers.

IMPORTANT BLADE CHANGING INSTRUCTIONS

There is a very important indexing adjustment when changing blades!

There is some side-to-side play allowing a blade to go over to one side or the other of the planer. This can make the effective blade width of the planer extra wide or it can make the cut be to the left or right of the base plates. To keep that from happening, center each blade to the main mandrel. The best way to do that is to use a small screwdriver or the equivalent to move the blade and blade holder.

BASE PLATE LUBRICATION

To keep pieces of glue from gumming the bottom of the planer and to keep the planer moving over the work smoothly, lightly spray the base plate with a silicon spray. Repeat fairly frequently for optimum performance.

Care must be taken to keep the coating very light and keep the silicone off shaped blanks. It will ruin the glass job!

WD-40, light oils, Triflow, Teflon, and hard waxes have been successfully used.

BASE PLATE MODIFICATION

The edges of the rear base plate are left square and sharp on new planers. They were left this way as many shapers want foam dust and wood dust to be pushed ahead of the planer. If the edges are rounded the planer will lift over the dust.

The edges can be easily rounded. Caution is advised as aggressive rounding makes the planer tipsy.

When the planer comes from the factory the rear base plates vary in thickness and some are warped. Therefore, we strongly suggest that you do not use the rear base plates from older planers on the 2003 Model. The base plates on the 2003 Model are milled to a uniform thickness and then a custom made plastic gasket is inserted between the rear base plate and the plastic housing. This makes the indexing of the blades exactly the same on all 2003 Model planers.

POWER CORD ADJUSTMENT

When using a vacuum system, simply attach the cord to the vacuum hose.

Without a vacuum system it is important to loop the cord forward, then back around and then cable tie or tape the cord to the top of the handle. When using the planer wrap the cord around your arm.

Never let the cord simply drag on the blank. This will cause premature cord failure.

Note that some shapers drape the cord over their shoulder.

KNOB SELECTION

The large depth adjustment knob on the 2003 Model is a 1/2" - 13 pitch Standard Thread. There are quite a few stock knob designs available with this thread and will fit directly on the planer. We normally stock several types of knobs at our factory.

The knob that comes with the planer can be modified to suit the individual shaper using tape or other materials.

The depth adjustment indicator knob that comes with the planer can be eliminated or replaced with any knob with a 3/16" hole.

THE DOUGHNUT AND DEPTH ADJUSTMENT INDICATOR

In this section we will discuss the most important decision you must make when setting up your planer. Put a lot of thought into this decision for once you glue certain parts together the decision is fairly permanent.

Before attempting to complete the procedures below it might be helpful to read the rest of the instructions for the depth adjustment mechanism. Some parts of this mechanism are not obvious.

Directly under the main depth adjustment knob is an aluminum collar with an Allen Screw that pinches the collar onto the main depth adjustment screw shaft. We call this part the DOUGHNUT.

You will note that there is a 3/16" hole drilled in the DOUGHNUT. It is for the 3/16" steel pin that is the depth adjustment indicator.

In the Tool Kit you will find an Allen Wrench, a small knob, several 3/16" pins, and a packet of glue.

You can rotate the DOUGHNUT's position relative to the depth screw as long as the large knob has not come unscrewed. Simply loosen the Allen screw and rotate the DOUGHNUT. (Note that if the large knob loosens during this process you must reassemble the depth adjustment mechanism. This procedure is explained in a later section of this Manual.)

Either by trial and error or by past experience set up your depth adjustment indicator.

When you have made your final decision glue the shaft and small knob in place using the packet of glue in the Tool Kit. The glue should dry within 30 minutes prior to using the planer. A two-component, fast acting epoxy glue will also work and is fast.

Again, this is a very important decision. If you change your mind at a later date a new DOUGHNUT, small knob, and 3/16" shaft material can be purchased from Clark Foam.

After you have finished the above procedure you might find that the adjustment is loose and there is backlash or play. If this happens you must reassemble the depth adjustment mechanism per the instructions later in this Manual.

DISASSEMBLY OF THE DEPTH ADJUSTMENT MECHANISM

It is important that you remember the position of each part for re-assembly. It might be a good idea to write down the position of each part. The unit will not work properly if a part is missing. (There is also a diagram later in this manual.)

Unscrew the large knob, remove the spring washer, loosen the Allen Screw, and remove the DOUGHNUT. Next remove the Teflon washer and drop the front plate assembly out of the planer's plastic housing. There will be some very important washer shims that go between the screw assembly and the plastic housing. Be sure these are kept intact. The foam piece should be removed. If there is a maximum cut depth collar installed remove it. This is as far apart as the unit will go as the rest of the depth adjustment unit is glued together.

SERVICING THE DEPTH ADJUSTMENT SCREW

Use hot water or a solvent and compressed air to clean the screw mechanism. This may take several applications or soaking. When clean, carefully dry the unit.

Due to Teflon coating normally no lubrication is required.

If you feel lubrication is required we recommend a light coat of Triflow lubricant.

Experience has shown that a heavy oil or grease will turn into a solid in the presence of foam dust. If you feel there will be no foam dust present then grease can be used.

SERVICING THE FOAM FILTER

Without the foam filter and three 1/2" plastic plugs in the front of the green housing the depth adjustment mechanism will gradually fill with foam dust and debris making the unit perform poorly.

To clean the foam filter wash it with warm water and soap. Then rinse it and dry it well. If there is any damage to the foam replace the filter.

If you run the planer without the foam filter or plugs you should service the depth adjustment mechanism main screw every 100 blanks.

We feel that with the foam filter and plugs in place there is no need for service for the life of the planer.

ADJUSTING THE MAXIMUM CUTTING DEPTH

This feature is useful for shapers who use a fixed depth cut and shapers who do not want to make deep cuts.

Included with the parts that come with the planer is a ring type spacer. This spacer can be placed on the cylinder attached to the front base plate. This will limit the maximum cutting depth of the planer. To adjust the maximum cutting depth, carefully file or grind down the ring.

INDEXING THE BASE PLATES AND START OF CUT

This is an important adjustment. Some shapers want the blade to clear the foam by a wide margin while they are moving the planer backward. These shapers will require the depth adjustment indicator to move some distance from the far-left position before the blade starts cutting. Other shapers use the far-left position of the depth adjustment indicator as a reference point so they want the planer to begin cutting just as the indicator is moved off the far-left position.

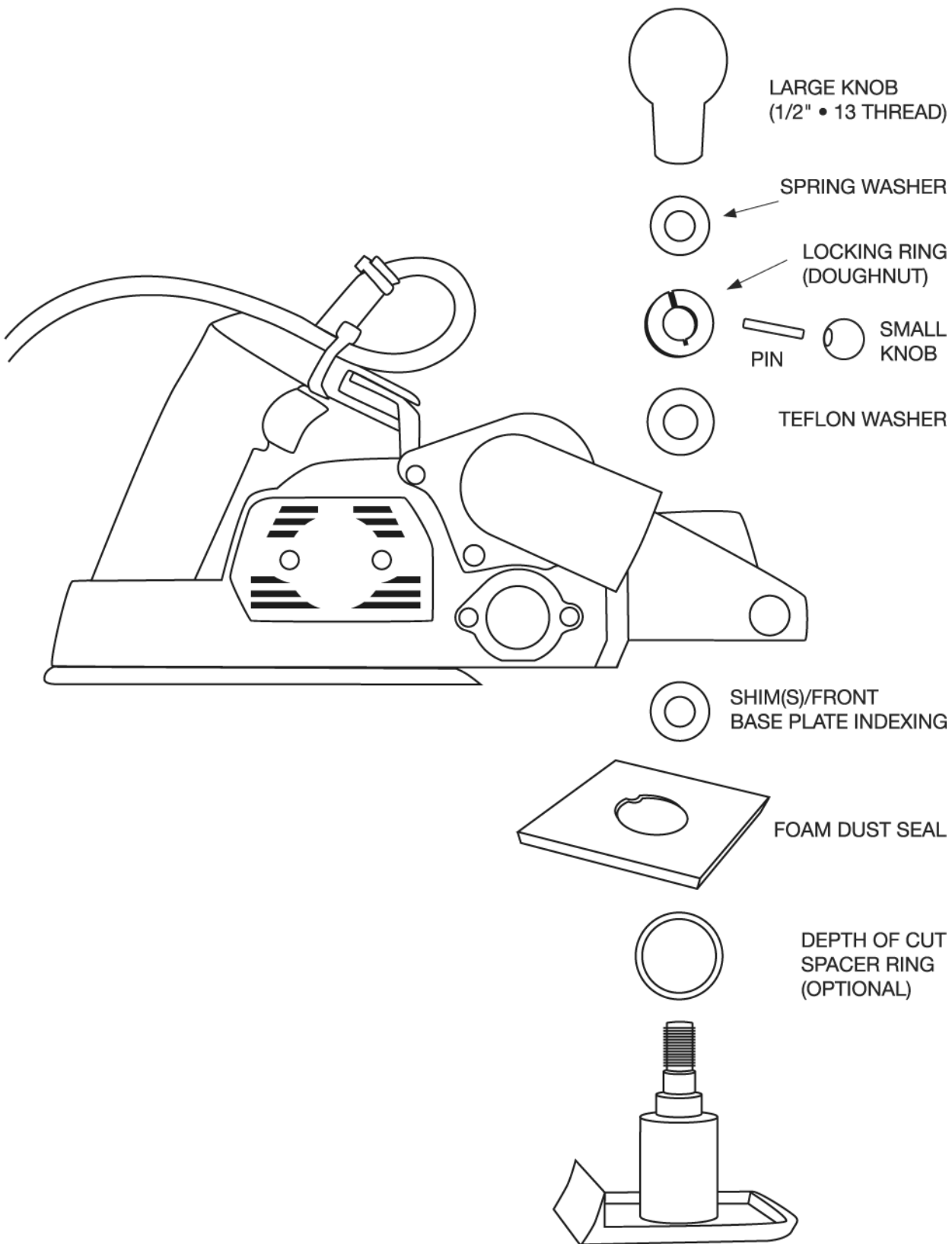
This setting is made using shim washers between the top of the depth adjustment screw and the bottom of the main housing. Each planer has its own set of shims as the molded plastic housings vary in thickness and position.

For shaping surfboards the front base plate appears to work better for the majority of shapers if it is indexed exactly to the rear base plate. This means the blade will start cutting just as the depth adjustment indicator starts turning. This is the factory setting.

Individual shapers may prefer different settings. Shim washers are available from Clark Foam for changing this adjustment.

FRONT END ASSEMBLY DIAGRAM

The following diagram demonstrates the proper order of assembly for the planer parts.



DEPTH ADJUSTMENT MECHANISM ASSEMBLY AND ADJUSTMENT

During assembly the following three very important adjustments are made:

1. The direction of the depth adjustment indicator knob is set in the position preferred by the shaper.
2. The depth adjustment knob tension or ease of turning is set. This is dependent on how hard the DOUGHNUT is pressing against the planer housing. This same adjustment is used to eliminate the backlash or play caused by a space between the housing and the DOUGHNUT.
3. The position where the depth adjustment knob starts cutting foam is set. This is done with washer shims. The factory setting is with the front base plate indexed to the rear base plate. This can be changed with shims. It also might be necessary to make this adjustment due to wear.

The method used for adjusting the planer is not obvious so carefully follow the steps below:

1. Position the foam filter on the base. If you are using the maximum depth adjustment collar put it in place. Make sure the plastic plugs are in the three holes on the main green plastic housing.
2. Carefully replace the shim washers on the adjusting screw so they will be next to the green plastic body on the base plate side. Less shim will raise the front base plate. More shim will lower it. Extra shims are available from Clark Foam.
3. Carefully put the front base plate in position. Make sure everything is perfectly aligned. Set the back base plate of the planer on a flat surface.
4. Put the Teflon washer in position and place the DOUGHNUT in position.
5. Turn the depth adjustment stud coming through the planer counterclockwise as far as it will go.
6. Position the depth indicator where you want it to point when the planer is making the minimum cut or no cut. This will be the far left or counterclockwise position.
7. With the stud pulled up as far as it will go tighten the Allen Screw on the DOUGHNUT. Be sure to pull up as hard as you can before tightening the Allen screw. Also, the stud coming out of the planer must be turned counterclockwise as far as it will go
8. The next step is to take out all the play between the DOUGHNUT and the lower depth adjustment mechanism by squeezing it tight against the Teflon washer and the planer's plastic housing. The force it takes to operate the depth adjustment mechanism is also set at this time. This operation cannot be done by hand. Place the spring washer on the DOUGHNUT. Next screw down the big knob and compress the spring washer. Using the Allen wrench loosen the DOUGHNUT. The spring washer will then automatically force it down. Tighten

the DOUGHNUT. Check the movement. If it is still too loose repeat the process. This is a key adjustment and due to wear it may need to be repeated later in the life of the planer.

9. Carefully check the way the depth adjustment operates. Check the alignment between the front base plate and the rear base plate to see if it is the desired setting. If anything is wrong repeat the steps above.
10. Tighten the big knob. If you experience a problem with the big knob coming loose use Loctite or a similar brand of thread locking compound.

DUST EXHAUST OUTLET

There are three possible configurations for the exhaust:

- The dust exhaust pipe can have limited rotation between the 10:00 and 3:00 o'clock positions. This configuration is normally used for vacuum systems. This is the configuration when the planer leaves the factory.
- The dust exhaust pipe can have full rotation for unlimited positioning. This is the configuration used when there is no vacuum. To utilize this position, all (3) screws must be removed and the outer gasket as well as the exhaust pipe must be removed from the planer. Next, remove the 1/2" long piece of 1/8" steel keystick from the inner gasket, which serves as the stop for the exhaust pipe. Now reassemble the unit following the reverse method.
- The dust exhaust pipe assembly can be completely removed and replaced with the "stock" deflector plate (available through our parts service). This configuration rarely jams but showers the shaper with dust when the exhaust is pointed straight up. Left-handed shapers have the exhaust going at them all of the time. This configuration was widely used in the past but is rarely used by professional shapers.

VACUUM SYSTEMS

It is important to note that some of the best and fastest shapers in the world do not use vacuum systems. Therefore it is easy to conclude that they do have a number of disadvantages.

The advantages of vacuum systems are:

1. The shaper can see better as there is no dust in the air.
2. The shaper stays very clean.
3. Shaping room cleanup is very easy. (This is, however, very dependent on the vacuum system being used.)

4. Fire hazard is dramatically cut. This makes the local Fire Marshall very happy. In areas with tough fire inspection policies this can make the difference between being allowed to operate, or being shut down.

Clark Foam has developed a vacuum system for the 2003 Model Planer. We also stock components and supplies for vacuum systems. Our system and components are chosen carefully for optimum vacuum efficiency, high productivity, and a neutral feel on the planer.

Also available is a current sensing device that turns on the vacuum when the planer is turned on, and turns off the vacuum with an adjustable delay of up to 180 seconds. This is a very important feature when using planers like the 2003 Model that have built in exhaust fans. If you begin cutting with the vacuum turned off the vacuum hose will quickly jam. Planers like the Skil 100 normally will not jam with the vacuum off.

MAINTAINING THE BRUSHES

The brushes are a well-known wear part on the planer. They are located on the right side of the planer. There are two on the planer located opposite of each other. They are easy to check and easy to replace using a medium size screwdriver. If a brush is worn to the point that the motor will no longer run there could be serious damage to the main motor. Therefore it is wise to periodically check one of the brushes. If the brush is worn to the mark approximately 1/4" from the end then both brushes should be replaced.

The brush wear is directly related to use so a calendar or board count can be used to predict wear.

MAINTAINING THE TRIGGER

New planers come with a light lubrication on the trigger working mechanism.

From experience we know that the triggers periodically fail in the surfboard shaping environment.

Prior to assuming the trigger has failed it is a good idea to check the brushes for they could be the problem.

When taking the planer rear handle apart and putting it back together, be very careful of the lower screw. The lower screw is all that is holding the bottom of the handle to the planer housing.

To be absolutely sure the problem is the trigger, connect both wires attached to the trigger to a single trigger terminal and plug in the planer.

If the brushes are OK and the trigger is OK, look at the wiring in the rear handle and under the back base plate. Next look at the power cord. At some point a voltmeter or voltage indicator may be required.

POWER CORD MAINTENANCE AND ADJUSTMENT

Since the Clark Foam planers were first introduced we have seen a lot of power cord damage. Shapers often try to repair the damage with tape. This is not recommended. When a power cord is damaged order a new power cord from Clark Foam and install it exactly the same way the old one was installed.

When taking the planer rear handle apart and putting it back together, be very careful of the lower screw. The lower screw is all that is holding the bottom of the handle to the planer housing.

BEARING MAINTENANCE

A failure to keep the area around the bearings clean will insulate the bearings causing overheating and premature failure of the main cutter bearings. This problem can cause severe overheating causing the plastic housings to melt. A melted main plastic housing is pretty much the end of the planer! Fire could also be a problem. We also believe a hot bearing will melt foam causing a buildup of polyurethane on the bearing.

Never run the planer when the bearings are noisy or there is measurable play. This is dangerous and could ruin the planer.

When replacing bearings it is important to avoid using the stock bearings from Hitachi. They do not last long in the presence of foam dust. For maximum performance buy replacement bearings from Clark Foam. We use bearings that are custom built for minimum friction while providing an adequate seal from foam dust. They add to the planer's effective power and acceleration.

When new bearings are installed there is significant break in period where the planer will not run at full speed.

Note the bearings on the 2003 Model are not the same as the bearings on the older Pro Model. They have less friction or drag giving the planer more power.

REPLACING BELTS

The drive belt between the cutter motor and the cutter lasts surprisingly long. They do, however, eventually wear out.

To change the belt, turn the pulleys and guide the belt off the pulleys. The only thing that needs to be removed is the guard. Never operate the planer with the guard off.

SHAPING TIPS FOR THE 2003 MODEL

Until the experienced shaper becomes familiar with any new planer they will have trouble with accurate depth adjustment.

In our research we saw experienced, very productive shapers using planers that were hopeless pieces of junk. They were very familiar with their planer so thought it was perfect.

The lesson for the experienced shaper is that once they have trained their reflexes to a specific planer it will be difficult to change to another planer without serious productivity and quality problems. Therefore, the experienced shaper should carefully evaluate any changes or adjustments for it would be very, very easy to pass up an opportunity to improve productivity.

From novice to expert the best possible tip is to watch what other shapers are doing.

The angle of the rear handle of the 2003 Model planer requires that the blank and lights be higher than when using other planers. This is normally an advantage to the shaper. If the work is too low the hand gripping the rear planer handle might exhibit fatigue.

(During our research we noticed than many shapers used pretty unorthodox shaping heights. We recommend that all shapers be conscious of height for both accuracy and fatigue.)

Use sharp blades at all times. A sharp blade increases the planer's cutting power. A sharp blade also improves the quality and accuracy of the finished cut allowing the planer to be used for more of the finish shaping work.

The 2003 Model depth adjustment mechanism has the most hand clearance of any power planer used for surfboard shaping. This allows an all-new range of options and adjustments. Also, by having so much hand clearance, it will be more difficult to find reference points for cut depth of the type found in other planers.

Carefully study all of the options and adjustments for the depth adjustment mechanism. You need to be an expert! This mechanism may take frequent maintenance, as very slight wear will cause a significant change in performance. This mechanism can be adjusted to provide very high performance. It can also be poorly adjusted making the planer very difficult to use!

Carefully evaluate custom modifications to the depth adjustment mechanism to fit your style or prior experience.

Once you have the planer depth adjustment mechanism set up try to avoid changes in settings. It will take time to adapt to a new setting.

Shapers may encounter a floating or lifting problem with the 2003 Model. This is because the angle of the rear handle favors forward motion and provides little down pressure. This is a radical departure from the prior planers sold by Clark Foam. They had a rear handle angle that favored down pressure. The rear handle angle of the Skil 100 planer provides slightly more downward pressure than the 2003 Model, but the Skil 100 is a lot heavier. The weight of the Skil 100 helps hold the planer down on the blank. The result will be that the 2003 Model will tend to lift up on its own and fail to cut to full depth. Therefore the shaper will have to learn to exert more downward pressure when using the 2003 Model. The downward pressure must also be properly focused.

A vacuum will increase the downward pressure.

During the adjustment process it may help to focus on the forward part of the rear base plate. This is the area that makes a cut straight. Whether or not they are conscious of it all experienced shapers are focusing their main pressure on the rear base plate.

PLANER LENGTH AND WIDTH THEORY

When developing or analyzing shaping technique it is helpful to understand the basic length and width geometry of power planer shaping.

Our experience is that this is a difficult subject to understand, even for very experienced shapers. It is, however, helpful for any shaper to understand this subject.

There is a universal base plate width of approximately 3". On early models sold by Clark Foam we made an error and rounded the rear base plates making them about 3/8" narrower. This has been corrected with the 2003 Model.

For length geometry there are three basic scenarios. All three scenarios are modified to some degree as the planer is turned sideways or compound curves are encountered. They are:

1. The first is a perfectly flat surface. Both base plates have 100% surface contact. The longer the planer the straighter the cut will be.
2. Second is a concave surface. This is like the deck nose area on most boards. Here the front of the front base plate and the rear of the rear base plate are all that is touching the blank. A shorter planer works best. While planing a concave surface the shorter planer's cutting depth adjustment is also a lot more accurate.
3. Third is a convex surface. This is probably encountered a lot as the planer is turned sideways with a slightly round bottom or deck. It is also encountered a lot on the bottom of a board. When planing on a convex surface you can rock the planer back and forth from front to rear altering the base plate surface that is touching the blank. In the most natural and accurate cutting position the pressure would be on the rear of the front base plate and the front of the rear base plate. In this position the ends of the planer are not touching anything. Therefore the overall length of the planer is irrelevant. A long planer and a short planer work exactly the same.

The above holds true only when the base plates and blades are perfectly indexed.

SKIL 100 PLANER COMPARISON TO THE 2003 MODEL

When switching from one planer to another it is helpful to know the differences between the planers for the purposes of adjusting to the different planer and making a decision as to which planer to use. When comparing the 2003 Model to the Skil 100 below are some of the more significant differences:

- The Model 2003 is a little over one half the weight of the Skil 100. This appears to be the main incentive for considering the 2003 Model.
- The front base plate of the 2003 Model is about 3/8" narrower and 5/8" shorter than the Skil 100. (By custom order we can make the front base plate the same width as the Skil 100 and slightly longer.)
- The rear base plate on both planers is identical in width.
- Most Skil 100 planers have the rear base plates modified to 8" or less in length. The Model 2003 has a 6 1/2" rear base plate. (It is possible to make an extended base plate for the Model 2003 from 1/4" aluminum plate and shims. We tried this at Clark Foam and saw no advantage.)

- While the rear base plate widths of both planers are almost identical, the width of the 2003 Model blade is almost 1/4" wider than the Skil 100 stock blade. Our best guess is that this tends to cause small blade marks in the foam. (Note that if the 2003 Model has the blades adjusted improperly the width could be almost 1/2" wider than the Skill 100 or the blades could be adjusted off center. This would result in problems.)
- The depth adjustment mechanisms are totally different and the Skil 100 has been universally accepted as the best design ever.
- The Skill 100 starts a shallow cut with the front base plate very close to the cutter blade. It appears this would result in a very, very accurate shallow cut. It also allows for far more accurate shallow cuts on convex surfaces.
- The Skill 100 front base plate is very far from the blade with moderate to deep cuts. The 2003 Model is furthest from the front base plate with shallow cuts and closest with the maximum depth cut. This is a significant difference and may require an adjustment to shaping technique.
- The distance between the front base plate and rear base plate varies on the Skill 100 depending on the depth of cut. It is always the same on the 2003 Model. The distance between the front base plate and the rear base plate is shorter on the 2003 Model than on the Skil 100.
- Using the Skil 100 it is significantly easier to tell cutting depth by the sound of the planer because it makes more noise.
- It appears the rear handle position of the Skil 100 is excellent and we did our best to copy this position with the 2003 Model. (We could not copy it without incurring a significant expense or we would have copied it.)
- The Model 2003 body width is slightly greater than the Skil 100.
- There are several Skil 100 motors. So far the 2003 Model's power and RPM appears adequate for shaping. The late model Skill 100 has more torque and higher feet per minute blade performance than the 2003 Model. The performance of the 2003 Model was improved with our special bearings and the new blade sharpening method so the performance gap has been narrowed compared to the older Pro Model. Performance will also be improved after the bearings have been broken in.
- By frequently using the Clark Foam blade sharpening service the effective power of the 2003 Model can be significantly increased relative to the common practice of using dull blades on Skill 100 planers.
- The Model 2003 has a fan that blows the dust out of the planer. This allows a smaller exhaust pipe and a weaker vacuum system. The Skil 100 does not have such a device. The big disadvantage of the Model 2003 is the fact that it will jam a vacuum system hose when the vacuum is turned off. The Skil 100 will normally blow the dust onto the work.
- The Skil 100 is more durable than the Model 2003.
- We estimate that a late model, brand new Skil 100 would sell for approximately ten times the cost of a 2003 Model Clark Foam Planer.

HISTORY

We added this section because many people question why Clark Foam is in the power planer business. We also think some history might be interesting to a person who uses power planers to earn their living.

In 1988 the Skil Corporation suddenly announced they were discontinuing production of all power planers. Since it was introduced in the 1930's, the Skil 100 planer had been used for almost all surfboard shaping. In 1988 a Rockwell planer was the only other power planer in use by professional shapers.

While questioning a Skil Vice President in 1988 we were told the following: The planer was selling well but their tooling was worn out. The tooling had been built in the 1930's. It was their prediction that the new plastic planers would be cheaper to produce and would eventually capture the market. They felt it was not a good investment to retool. It turned out that they were right. The market for surfboard planers is so tiny and specialized that they laughed at our problem.

Immediately Clark Foam looked at and purchased every type planer then available in the United States. We decided a modified Hitachi F-30 would be the best substitute for the Skil 100. We began modifying the F-30. At the last minute we included a modified Hitachi F-20 as a "beginners planer" or "small board" planer.

Much to our surprise the F-20 outsold the F-30 by a huge margin. Modifying the F-30 was almost a waste of our time. Hitachi made the decision for us when they discontinued the F-30 in the early 1990's.

Looking back we attribute the success of the smaller planers to a combination of availability, lower cost, and lightweight. Many believe the lightweight was the most significant factor.

Since the 1988 introduction of the modified F-20 several things have happened. We made a few modifications such as the vacuum attachment and several minor design changes. We improved our production technique. Hitachi's production was moved from Japan to China resulting in a slight decrease in quality and a decrease in price. The F-20 was replaced by the P-20SB. (The changes were insignificant.) Computer controlled shaping machines appeared, decreasing the demand for planers. And last, but probably most significant, it turned out there was a large supply of Skill 100 planers around the world.

Despite rumors and some opinions to the contrary, there were no new planers developed after 1988 that were better suited to shaping surfboards than the modified P-20SB series.

By 2003 four things had clearly changed. First the cost of the Skil 100 parts and planers had increased dramatically. While they are incredibly durable they are slowly wearing out. Some spare parts are being manufactured, but at a very high cost. Second it had become very clear the P-20SB is durable and a good value rather than a “plastic toy”. Third some shapers had gotten really good at using the modified P-20SB and evidently preferred it to the Skil 100 for some or all of their shaping. One of the major factors was weight. Last some serious shapers were identifying problems with the modified P-20SB and were making some pretty trick modifications.

By 2003 we realized that Clark Foam had made some serious errors. First we did not include a manual such as this one with all of our modified planers. A lot of shapers were really struggling with the required maintenance and repairs. Furthermore, many shapers did not know we carried parts, could offer phone help, and did repairs. Last, and most serious, we had not made a commitment to the continued development of the planer.

The commitment was made to fix our errors. As a first step we again looked at all planers available in the United States. We now have a very contemporary planer collection at our factory. The Bosch 1594 clearly won the overall design, power, and RPM award for an out of the box small planer. Our analysis showed the Bosch 1594 would be difficult to convert to a surfboard planer so we stuck with the P-20SB. In our opinion it is still the easiest planer to modify and it has some other significant advantages.

As a first step in the development process we got a lot of input from shapers. We also checked out numerous modifications made by shapers. We carefully studied the Skill 100. During our development work we concluded that the original 1930's Skil 100 designer went on to design the first atomic bomb. What a design!

During testing and information gathering we noticed the majority of shapers were running their planers on dull blades. This is the equivalent of reducing a planer's power. It also limits the amount of the final shaping that can be done using a power planer. This is how we came up with the idea of a blade exchange and a blade sharpening service.

Once we had the power planer sharpening service in place we extended the service to the hand planers we sell.

SUGGESTIONS

We welcome any suggestions for improving our planer and improving this Manual.

TOOL KIT AND PARTS

- A "T" socket wrench for changing the blades.
- A jig for indexing blades using the blade holder. (For an instruction Manual contact Clark Foam.)
- An Allen Wrench for the DOUGHNUT under the big knob.
- A depth of cut spacer ring that can be installed to decrease the maximum cutting depth. The ring can be modified.
- A kit for modifying the indexing mechanism in a separate plastic bag.